Bourdon tube pressure gauge with electrical contact device
DN 100/160, Type Series BE4 . . .

Features

- Case DN 100/160 with rear blow-out device per EN 837-1 S1
- Case and pressure element assembly of stainless steel
- Electrical contact device per DIN 16085:
  - slow acting contact
  - magnetic snap contact
  - inductive contact devices

Options

- Explosion protection
- Safety pattern gauge with solid baffle wall and blow out back
- Case with liquid filling and degree of protection IP 66
- Classification per SIL 2
- Approval German Lloyd
- Connection to Zone 0
- Material certificate per DIN EN 10204
- Free of oil and grease for use with oxygen
- For use with acid gas

Application area

· Chemical and petrochemical industry
· General process technology
· Shipping
· Machinery construction

Application

The bourdon tube pressure gauge with electrical contact device is suitable for use in measurement and control systems for indicating and monitoring pre-selectable minimum and/or maximum pressure values. Mechanical contacts are used as slow acting contacts or with magnetic snap contacts. The devices can also be supplied with inductive contact devices.

Technical Data

Case
standard
· high quality case with bayonet ring DN 100/160, with rear blow-out device per EN 837-1
material: st. steel mat.-no. 1.4301 (304)
option:
· safety case with solid baffle wall and blow-out back per EN 837-1 S3

Degree of protection
IP 65 standard case, safety case without filling
IP 66 safety case with liquid filling

Pressure element assembly
bourdon tube and pressure connection
material: st. steel mat.-no. 1.4571 (316Ti)

Case filling
liquid filling Labofin

Process connection
pressure connection G 1/2 B, 1/2" NPT.
Bottom or eccentric back connection according to EN 837-1

Movement
stainless steel segment

Scale
pure aluminium, white with black inscription.
Option: with red marking.
Special scale upon request

Pointer
pure aluminium, black, with micro adjustment for zero-point correction

Window
non splintering laminated glass.
Option: non splintering plastic (Macrolon)

Case seal
sealing ring: Perbunan
filling plug: Desmopan

Atmospheric pressure compensation
for cases with liquid filling:
· standard case: ≤ 10 bar with reclosable filling plug
· safety case with pressure compensating membrane of silicone

Nominal ranges
per EN 837-1
0...1 bar up to 0...1600 bar
other ranges upon request

Overload protection
standard: loading up to full scale
higher overload protection see order details

Accuracy class
max. effect of contact devices on indication per DIN 16085

	DN 100		
nominal	no. of contacts		
range [bar]	1	2	3
1	class 1	class 1.6	/
≥ 1.6	class 1	class 1	class 1.6
	DN 160		
nominal	no. of contacts		
range [bar]	1	2	3
1	class 1	class 1.6	class 2.5
1.6	class 1	class 1.6	class 2.5
> 2.5	class 1	class 1	class 1.6

Temperature ranges
operating temperature range (ambient and measured medium)
without filling -20...+60 °C
with filling -20...+60 °C
safety case S3 with liquid filling -20...+40 °C
storage temperature range
without filling -40...+70 °C
with filling -20...+60 °C

Electrical connection
connection plug with cable gland M 20 x 1.5 and removable test cover, mat. Macrolon

Electrical contact device
Touch contacts or inductive contact devices see order code.
Further technical details see operating instruction BTA-037.

Explosion protection
magnet snap contact
Simple electrical apparatus per IEC/DIN EN 60079-11 suitable for intrinsically safe circuits Ex IIC T6.
inductive contact device
contact device suitable for intrinsically safe circuits
Ⓔx II 2G Ex ia/ib IIC T4/T5/T6
Reg.-no.: PTB 99 ATEX 2219X
PTB 00 ATEX 2049X
Further details see operating instruction BTA-037.

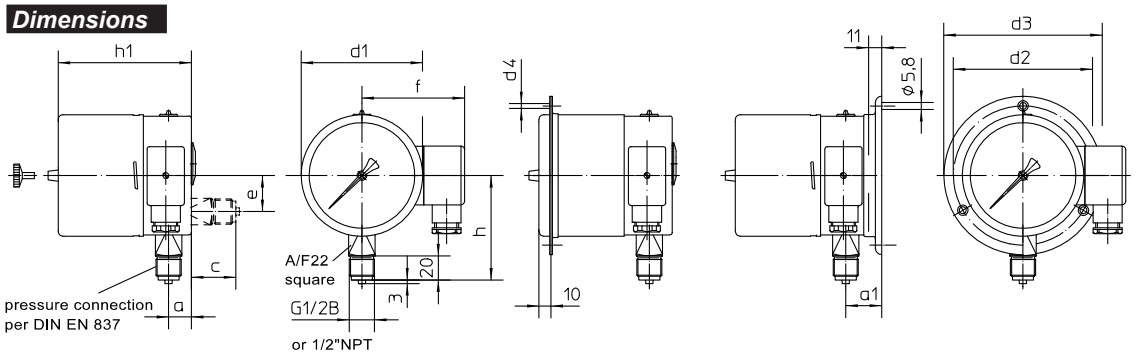
Functional safety
EN 61508, classification per SIL 2;
TÜV-Reg.-No. 44 799 09 555647 for gauges with inductive contact device only.

GL approval (German Lloyd)
per certificate no. 58798-08 HH for gauges with electrical contact device and liquid filling only.

Mounting
stand-alone, upon request with flange for surface mounting or for flush mounting

Weights
DN 100, without filling: approx. 0.9 kg
DN 100, with filling: approx. 1.5 kg
DN 160, without filling: approx. 1.8 kg
DN 160, with filling: approx. 3.6 kg

Dimensions



Standard design | for flush mounting | for surface mounting

Dimensions standard design (mm)											
case	d1	h1	a	c	e	f	h	d2	d3	d4	a1
DN 100	100	111	19	37	30	89	83	116	132	4.8	30
DN 160	160	112	19	37	60	119	113	178	196	5.8	30

Dimensions safety case (mm)											
case	d1	h1	a	c	e	f	h	d2	d3	d4	a1
DN 100	100	123	37	-	-	89	83	116	132	4.8	-
DN 160	160	133	37	-	-	119	113	178	196	5.8	-

Order Details

- please give additional specifications for models not listed -

Bourdon tube pressure gauge with electrical contact device					
standard case IP 65	DN 100	process connection	· bottom		BE420 .
			· back		BE421 .
			· bottom	with liquid filling	BE422 .
			· back	with liquid filling	BE423 .
	DN 160		· bottom		BE430 .
			· back	with liquid filling	BE431 .
			· bottom	with liquid filling	BE432 .
			· back		BE433 .
safety case IP 65 per EN 837-S3	DN 100		· bottom		BE450 .
	DN 160				BE460 .
safety case IP 66 per EN 837-S3	DN 100		· bottom	with liquid filling	BE454 .
	DN 160			with liquid filling	BE464 .
design	· standard				0
	· Ex-protection				1

standard nominal ranges			
nominal range	order code	nominal range	order code
-1...0 bar	086	0...10 bar	058
-1...0.6 bar	087	0...16 bar	059
-1...1.5 bar	088	0...25 bar	060
-1...3 bar	089	0...40 bar	061
-1...5 bar	090	0...60 bar	062
-1...9 bar	091	0...100 bar	063
-1...15 bar	092	0...160 bar	064
-1...24 bar	093	0...250 bar	065
0...1 bar	053	0...400 bar	066
0...1.6 bar	054	0...600 bar	068
0...2.5 bar	055	0...1000 bar	070
0...4 bar	056	0...1600 bar	071
0...6 bar	057		

process connection	· G 1/2 B, standard	A2
	· 1/2" NPT	B2
	· M 20 x 1.5	C2
nominal range	· per table	...
contact	*touch contact*	
	· slow acting contact	L2 . . .
	· magnetic snap contact	L4 . . .
	· slow acting contact, separated circuits	M2 . . .
	· magnetic snap contact, separated circuits	M4 . . .
	inductive contact device	
	· standard initiator	N4 . . .
	· safety initiator SJ2 - SN / SJ3.5 - SN	N1 . . .
	· safety initiator invers SJ2 - S1N / SJ3.5 - S1N [1]	N2 . . .
	· with integrated switching amplifier [2]	N6 . . .
switch function	· single contact (1st figure per table)	.00
	· double contact (1st + 2nd figure per table)	. .0
	· triple contact (1st - 3rd figure per table)	. . .

switch function	fig.
· increasing pressure makes contact	1
· increasing pressure breaks contact	2
· decreasing pressure makes contact	4
· decreasing pressure breaks contact	5
· change-over elements increasing pressure makes or breaks contact	3
· change-over elements decreasing pressure makes or breaks contact	6

additional features (to be indicated in case of need, only):		
overload protected	· 1.3 times (meas.range 250 up to 600 bar)	H1
	· 1.5 times (meas.range 6,0 up to 160 bar)	H4
	· 2 times (meas.range 1.0 up to 4.0 bar)	H2
window	Macrolon	R11
electrical connection	upon request	S.
marking	on scale (pls. specify)	T2
restrictor screw	upon request	U.
mounting	· rear flange for surface monting	V2
	· front flange for flush mounting	V3
functional safety per EN 61508, classification per SIL 2		W2603
approval German Lloyd		W2653
connection to zone 0	with zone 0 adapter (coupler element KF6) [3]	Z1

Order code (example): BE4200 A2060 N1100

[1] with DN 100: one contact device, only [2] not with ex-protection [3] only with ex-protection